supersonic waves to the metals of the electrode surface on the board side. The state in which the IC chip 1 is bonded to the board 4 is similar to those of Fig. 2 and Fig. 6 of the aforementioned embodiments.

When metallically bonding the gold bumps to the electrodes of the board with supersonic waves applied, it is acceptable to apply heat from the upper surface side of the IC chip 1 or from the board side or from both the IC chip 1 side and the board side.

According to this fourth embodiment, the solid anisotropic conductive film sheet 10 or the liquid anisotropic conductive film forming thermosetting adhesive 6b semi-solidified as described above, obtained by mixing the insulating thermosetting resin 6m with the inorganic filler 6f is stuck to the board 4 or the anisotropic conductive film forming thermosetting adhesive 6b that contains the thermosetting resin is applied to the board 4 and semi-solidified. Thereafter, the ball 96 is formed by an electric spark at the tip of the gold wire 95 through the operation as shown in Fig. 3A through Fig. 3F similarly to the wire bonding of the electrodes 5 of the board 4 and the electrodes 2 of the IC chip 1, and the IC chip 1 is mounted on the board 4 by aligning in position the bumps 3, each of which is formed by thermocompression-bonding this ball 96 to the board electrode 5 with supersonic waves by

means of the capillary 93, with the IC chip 1 without leveling the bumps 3. In this case, the aforementioned "the liquid anisotropic conductive film forming thermosetting adhesive 6b semi-solidified as described above" is the object obtained by semi-solidifying the liquid anisotropic conductive film forming thermosetting adhesive 6b as described in connection with the third embodiment, approximately similar to the object put in the B stage. At this time, in a supersonic wave applying device 620 as shown in Fig. 22, the gold bumps 3 are metallically bonded to the gold plating located on the board side while shaping the tips so as to prevent the collapse of neck portions at the tips of the gold bumps 3 by effecting a load of an air cylinder 625 applied from the upper surface of the IC chip 1 sucked and held by the pre-heated bonding tool 628 with a built-in heater 622 and the supersonic waves that are generated by a supersonic wave generating element 623 such as a piezoelectric element and applied via a supersonic wave horn 624. Next, the IC chip 1 is pressed against the circuit board 4 with a pressure force of not smaller than 20 gf per bump while heating the IC chip 1 from the upper surface side of the IC chip 1 and/or from the board side so as to correct the warp of the board 4 and crush the bumps 3, and the anisotropic conductive film sheet 10 or the thermosetting adhesive 6b

interposed between the IC chip 1 and the circuit board 4 is hardened by the heat so as to bond the IC chip 1 to the circuit board 4, electrically connecting both the electrodes 2 and 5 together. It is also acceptable to apply heat from the upper surface side of the IC chip 1 or from the board side or from both the IC chip 1 side and the board side at the time of the metallic bonding performed by the supersonic wave applying device 620. That is, in concrete, it is acceptable to apply heat to the IC chip 1 from the upper surface side by the built-in heater 622 or apply heat to the circuit board 4 from the board side by the heater 9a of the stage 9 or apply heat from both the IC chip 1 side and the board side by the built-in heater 622 and the heater 9a of the stage 9.

The reason why the pressure force of not smaller than 20 gf per bump is needed is that the bonding cannot be achieved since frictional heat scarcely occurs even by the bonding using supersonic waves as described above. Also, when bonding gold to gold together, frictional heat is generated by pressing the bump with a specified constant load and applying supersonic waves to the portion, by which the metals are bonded together. Therefore, even in this case, the specified load sufficient for pressurizing the bump, i.e., the pressure force of not smaller than 20 gf per bump is needed. For example, the pressure force is set